



Authorized Dealer

HEATH/ZENITH Computers & Electronics
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614 · 475-7200

Chroma Pro CM 1000 CRT Display C

ASSISTANT MANAGER

Heath ZENITH
Computers & Electronics

C.ITOH

This guide gives general information regarding installation, operation and connection of the Color Monitor.

INTRODUCTION

Thank you for buying the Chroma Pro CM1000.

CM1000 is an educational and professional use high quality color monitor.

It has following excellent features.

- Chromatic brilliant 16 colors
- High resolution (H: 640 x V: 240)
- Wide (13") and dark screen
- Green text mode with 16 tone gray scales
- Compatible with the most popular computer
- Connective with another monitor, VCR, VTR, video printer and so on
- Compact audio speaker

ACCESSORIES

1. Power cord 3 pin type (2 m): 1 piece
2. User manual: 1 set
3. Warranty card: 1 sheet
4. Input (or for output) signal common cable (1500 mm) for NTSC composite video, separate video and also for audio: 2 pieces (SCC100)

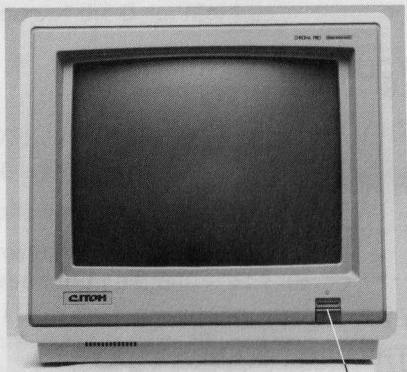
IMPORTANT NOTICE

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- The contents of this guide are subject to change, from time to time, without notice.
- All efforts have been made to ensure that the contents of this guide are correct; however, should any errors be detected, C. ITOH would greatly appreciate being informed.
- C. ITOH can assume no responsibility for errors in this guide or the consequences thereof.

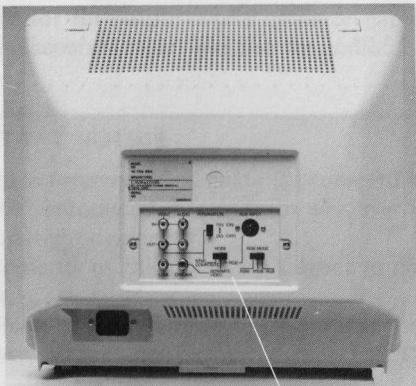
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I. LOCATION OF CONTROLS



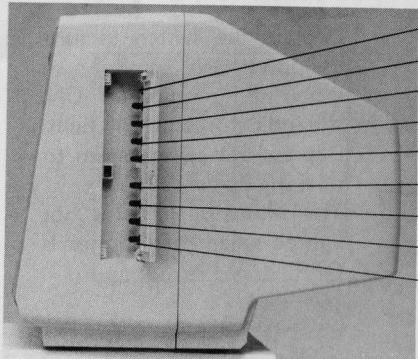
POWER SWITCH **1**



SIGNAL INPUT PANEL

II. USE OF CONTROLS

(FRONT)



TEXT SWITCH **2**

CONTRAST **3**

BRIGHTNESS **4**

COLOR **5**

TINT **6**

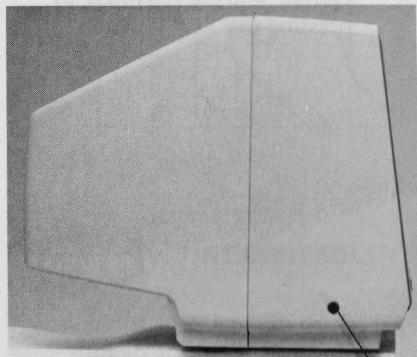
V. HOLD **7**

V. SIZE **8**

H. POSITION **9**

VOLUME **10**

(SIDE)



TEXTSWITCH



CONTRAST CONTROL



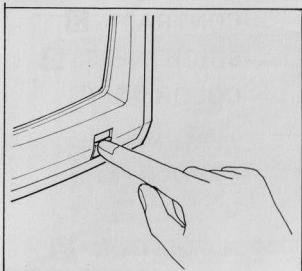
PHONE JACK **11**

Automatic or NTSC composite and separate video decoder (not for RGB mode)

II. USE OF CONTROLS

[FRONT]

1 POWER SWITCH



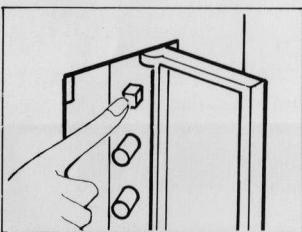
Depress the switch to turn the power ON.

When the monitor is ON, the indicator lamp will light. Depress this switch again to turn the Power OFF.

The indicator lamp is not lighted when the monitor is OFF.

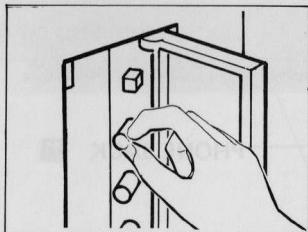
[SIDE]

2 TEXT SWITCH



When in the RGB mode, this switch changes the text color to green. This feature is activated and de-activated by pressing the TEXT switch.

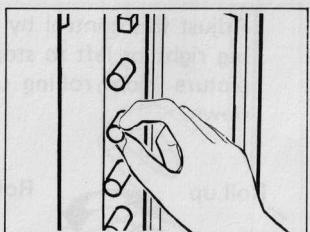
3 CONTRAST CONTROL



Turn this control to adjust the contrast of the picture.



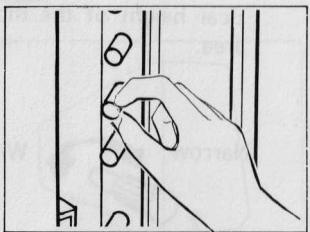
4 BRIGHTNESS CONTROL



Turn this control to obtain the desired level of screen brightness. To lessen eye fatigue, a medium setting is desirable.



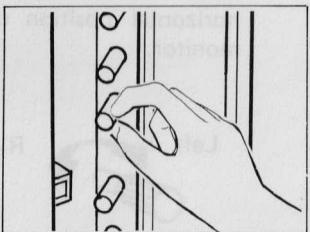
* **5** COLOR CONTROL



Turn the COLOR control to its center setting.
Adjust the COLOR control for the amount of color you like.



* **6** TINT CONTROL



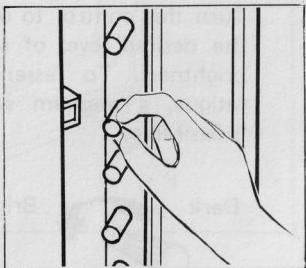
Adjust the TINT control for natural skin tones.



* **5** **6** : Available for NTSC composite and separate video modes (not for RGB mode)

II. USE OF CONTROLS

7 V. HOLD CONTROL



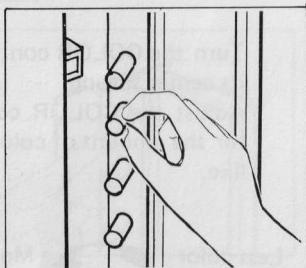
Adjust this control by turning right or left to stop the picture from rolling up or down.

Roll up



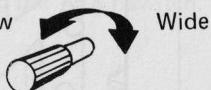
Roll down

8 V. SIZE CONTROL



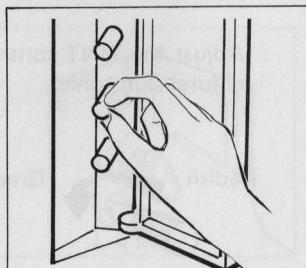
This control adjusts the vertical height of the monitor area.

Narrow



Wide

9 H. POSITION CONTROL



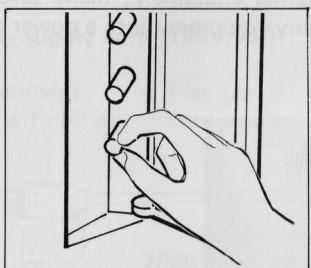
This control adjusts the horizontal position of the monitor.

Left



Right

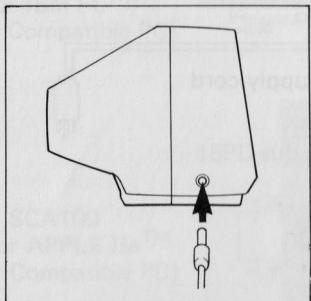
10 VOLUME



Turn this control to obtain the desired level of sound.



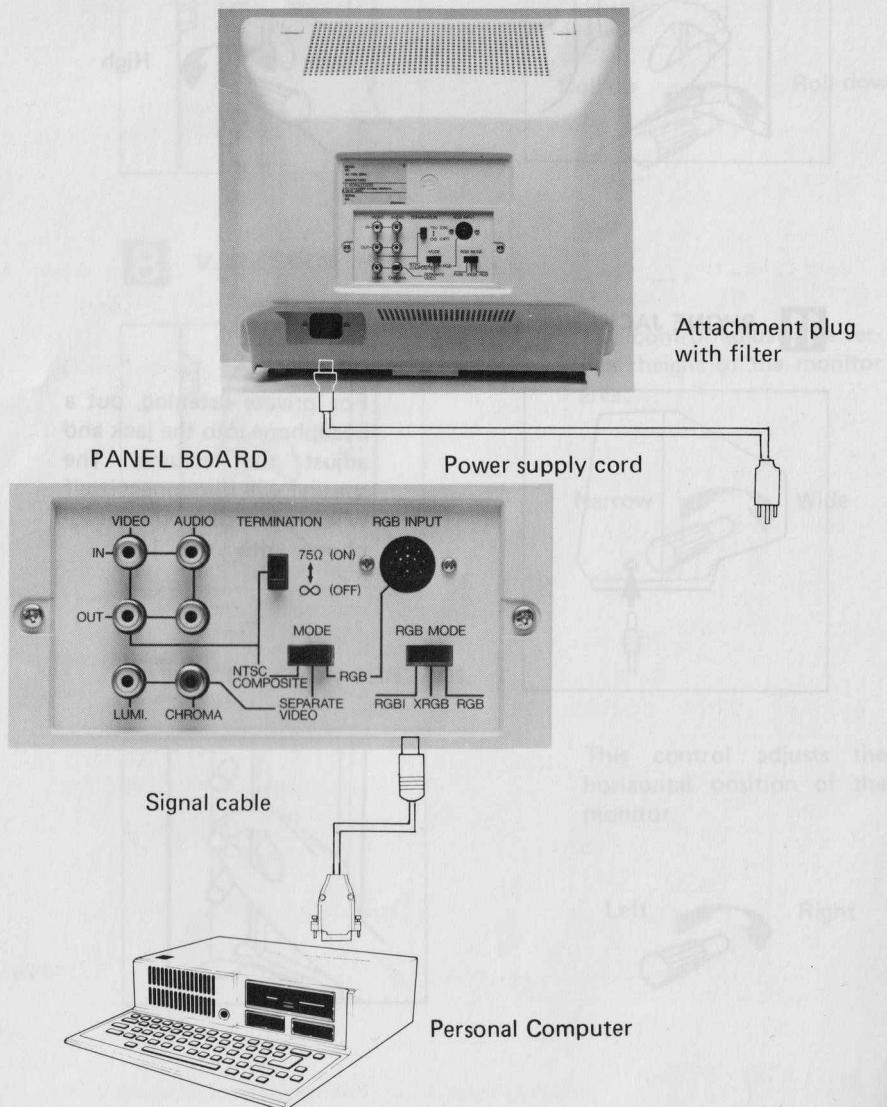
11 PHONE JACK



For private listening, put a headphone into the jack and adjust the volume. The speaker will disconnect itself when you plug the headphone into the jack.

III. HOW TO CONNECT YOUR MONITOR WITH EXTERNAL EQUIPMENT

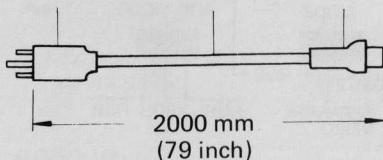
Before connecting your monitor with any external equipment, make sure all power switches are OFF. It is best not to plug any equipment into a power outlet until installation is complete.



This equipment has been tested and found to meet with the limits for a Class B computing device of FCC rule. When you use this equipment connecting with personal computer you MUST use the following supplied units otherwise you may be accused of unlawful interference.

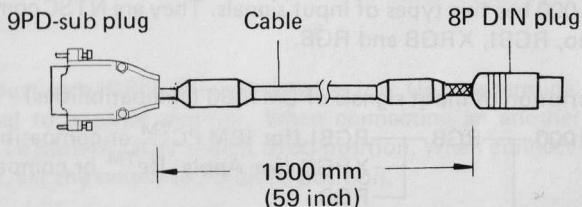
Power supply cord (125V/7A)

Attachment
plug with Filter Flexible
cord Round
vinyl

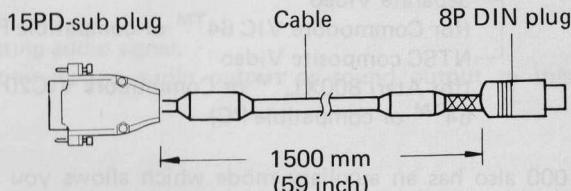


Signal cable (A, B & C: Option)

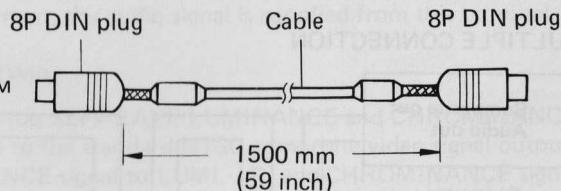
A : SCI100
(For IBM PCTM
or Compatible PC)



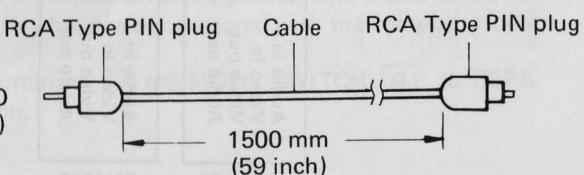
B : SCA100
(For APPLE IIeTM
or Compatible PC)



C : SCT100
(For TOSHIBA PCTM
or Compatible PC)

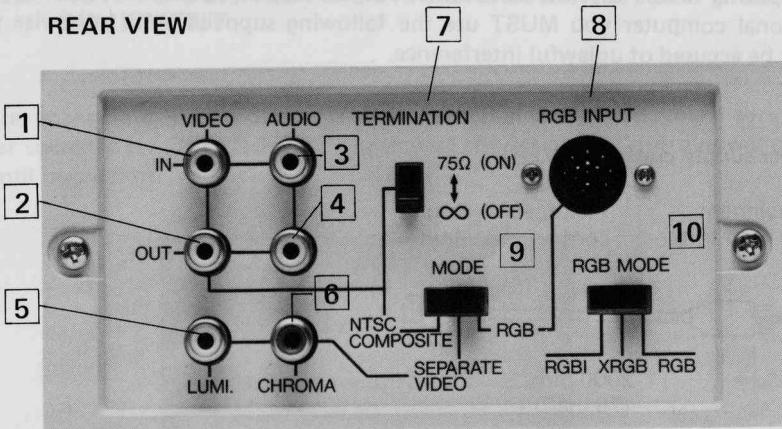


D : SCC100
(For COMPOSITE VIDEO
SIGNAL type Computer)



IV. SIGNAL INPUT PANEL

REAR VIEW



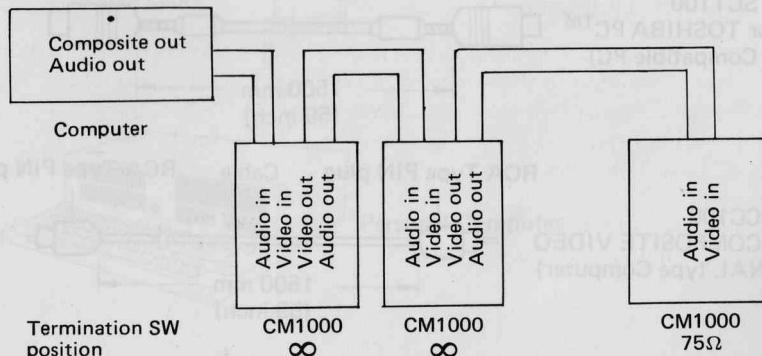
CM1000 has five types of input signals. They are NTSC composite video, Separate Video, RGBI, XRGB and RGB.

Description of input signals of CM1000 (compatibilities)

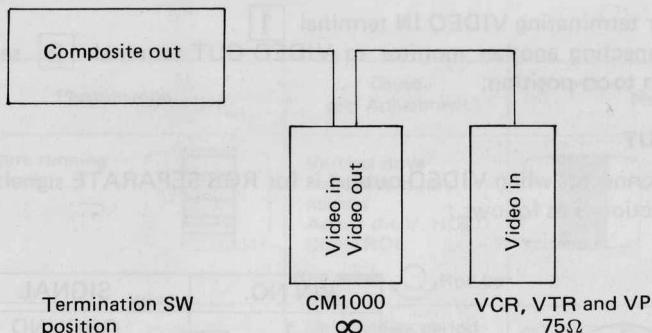
- CM1000
 - RGB
 - RGBI (for IBM PCTM or compatible PC)
 - XRGB (for Apple IIeTM or compatible PC)
 - RGB
 - Separate Video
 - (for Commodore VIC 64TM or compatible PC)
 - NTSC composite Video
 - (for Atari 800XLTM or Commodore VIC20TM and 64TM or compatible PC)

CM1000 also has an auxiliary mode which allows you to connect with VCR, VTR, VP (video printer), another monitor and so on.

1) MULTIPLE CONNECTION



2) VCR, VTR and VP CONNECTION



1 VIDEO IN

Terminal for inputting the standard NTSC composite video signal.

When using this terminal, set the MODE SWITCH **9** to NTSC COMPOSITE position.

2 VIDEO OUT

Terminal for outputting VIDEO IN input signal as it is. Use this terminal to supply a signal to another monitor. When connecting an another monitor, set the TERMINATION switch to ∞ -position. When connecting no equipment, set the switch to 75 ohms position.

3 AUDIO IN

Terminal for inputting audio signal.

Connect a computer having audio output or sound output to this terminal.

4 AUDIO OUT

Terminal for outputting AUDIO IN input signal as it is. When using other audio equipment, the audio signal is supplied from this terminal.

5 LUMI. 6 CHROMA

When a computer has SEPARATE LUMINANCE and CHROMINANCE signals in addition to the standard NTSC composite video signal output, connect LUMINANCE signal to LUMI-**5** and CHROMINANCE signal to CHROMA-**6**. In the separate video signal system, higher resolution and better color can be obtained as compared with the composite video signal system.

When using these terminals, set the MODE SWITCH **9** to SEPARATE VIDEO position.

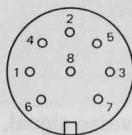
7 TERMINATION SWITCH

Switch for terminating VIDEO IN terminal **1**.

When connecting another monitor to VIDEO OUT terminal **2** set this switch to ∞ -position.

8 RGB INPUT

Use this connector when VIDEO output is for RGB SEPARATE signal.
Pin connection is as follows.:



8-Pin DIN
(View from wiring side
of cable connector)

PIN NO.	SIGNAL
1	GROUND
2	N : C
3	INTENSITY
4	H. SYNC.
5	V. SYNC.
6	RED
7	GREEN
8	BLUE
SHELL	SHIELD

Use of IBM PC™ requires the supplied connection cable (SCI100), and use of APPLE™ PC requires the supplied connection cable (SCA100).

9 MODE SWITCH

Switch for VIDEO INPUT.

For inputting NTSC composite video signal, set the switch to NTSC COMPOSITE position, for separate video signal, to SEPARATE VIDEO position and in case of RGB, use RGB position.

10 RGB MODE SWITCH

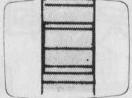
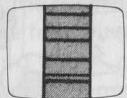
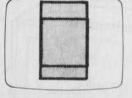
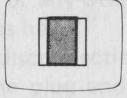
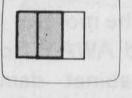
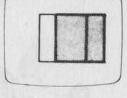
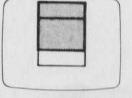
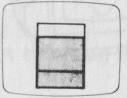
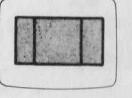
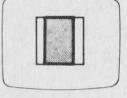
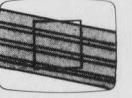
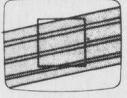
When inputting RGB separate signal, use this switch according to signal system of the computer used.

In case of RGBI as IBM PC™, set this switch to RGBI position, in case of APPLE™ PC to XRGB position and in case of NORMAL RGB to RGB position respectively.

Note:

- IBM, IBM PC are registered trademarks of IBM Corp.
- APPLE, APPLE IIe are registered trademarks of APPLE Computer, Inc.
- ATARI 800XL is a registered trademark of ATARI Corp.
- COMMODORE VIC20 and 64 are registered trademarks of Commodore Business Machines, Inc.

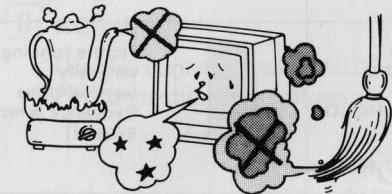
V. PHENOMENA THAT MAY APPEAR WHEN SIGNALS OTHER THAN THE RECOMMENDED ONES ARE RECEIVED

Phenomenon	Cause and Adjustment	Phenomenon
Picture running vertically	 <p>Vertical drive frequency is not normal Adjust the V. HOLD CONTROL Roll down  Roll up </p>	 <p>Picture running vertically (vertical drive frequency is not 59.9Hz)</p>
Picture expanded vertically	 <p>Data display period is not normal Adjust the V. SIZE CONTROL Wide  Narrow </p>	 <p>Picture contracted vertically</p>
Picture deflects to the left	 <p>Horizontal back porch or front porch period is not normal Adjust the H. POSITION CONTROL Right  Left </p>	 <p>Picture deflects to the right</p>
Picture deflects upward	 <p>Vertical back porch or front porch period is not normal</p>	 <p>Picture deflects downward</p>
Too wide picture	 <p>Data display period is not normal</p>	 <p>Too narrow picture</p>
Diagonal lines (horizontal drive frequency is not 15.7kHz)	 <p>Horizontal drive frequency is not normal</p>	 <p>Diagonal lines</p>

VI. HOW TO USE COLOR MONITOR

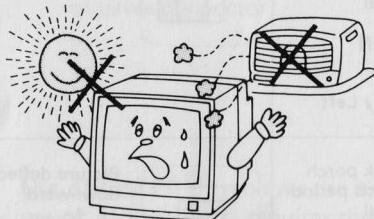
VI-1. PROPER LOCATION

- Select a clean, dry area for your monitor.



Excessive moisture or dust may create a fire hazard or cause interference.

- Place your monitor in a cool area.



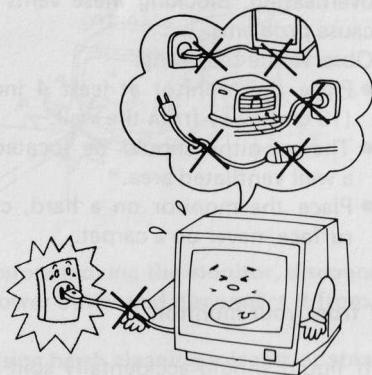
Locate the monitor OUT of direct sunlight and AWAY from heat sources to avoid cabinet damage or problems resulting from excessive heat.

Notes:

- IBM, IBM PC are registered trademarks of IBM Corp.
- APPLE, APPLE IIe are registered trademarks of APPLE Computer, Inc.
- ATARI 800XL is a registered trademark of ATARI Corp.
- COMMODORE VIC20 and 64 are registered trademarks of Commodore Business Machines, Inc.

VI-2. BASIC RULES TO OBSERVE

- Handle the power cord carefully.



A broken power cord or a power cord with its inner wires exposed can cause fire or electric shock.

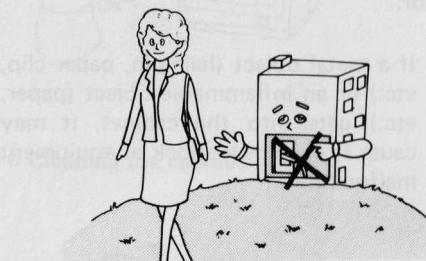
Observe the following:

- The cord and connecting cable should be freely movable, not placed under other equipment or furniture.
- Make sure the cord is not near a furnace or any other equipment that generates heat.
- When disconnecting the monitor, grasp the plug and pull it from the power outlet.

Do not pull the cord itself.

- If the power cord is damaged, consult your dealer for replacement.

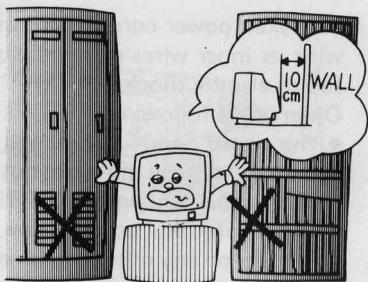
- If you expect that your monitor will not be used for a long time:



Disconnect the plug from the power.

VI. HOW TO USE COLOR MONITOR

- Locate your monitor in a well-ventilated area.

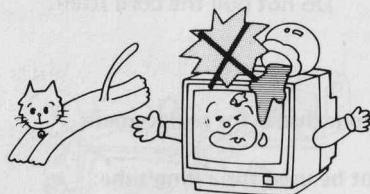


The monitor cabinet has ventilation holes to prevent the interior from overheating. Blocking these vents can cause problems.

Observe the following:

- Place the monitor at least 4 inches (10 cm) away from the wall.
- The monitor should be located in a well ventilated area.
- Place the monitor on a hard, clean surface, never on a carpet.

- Keep containers filled with liquid AWAY from your monitor.



If liquid should accidentally spill into the cabinet, disconnect the plug and consult your dealer.

Using a monitor that has become wet can cause fire, electric shock or equipment damage.

- Keep foreign objects out of your monitor.



If a metal object (hair pin, paper clip, etc.) or an inflammable object (paper, etc.) gets into the cabinet, it may cause fire, electric shock or equipment malfunction.

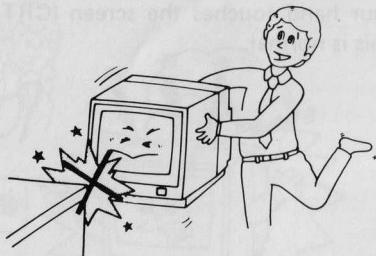
- The rear cover should not be removed.



Always consult your dealer for internal inspection or adjustment.

VI-3. PRECAUTIONS

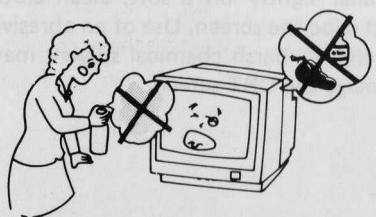
- Use extreme care when transporting your monitor.



A strong impact may cause serious damage.

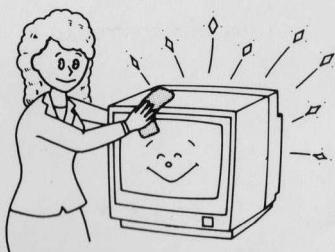
- Before moving the monitor, disconnect the plug from the power outlet and disconnect it from other equipment.

- Using harsh cleaning solvents or abrasive cleaners will damage the cabinet.



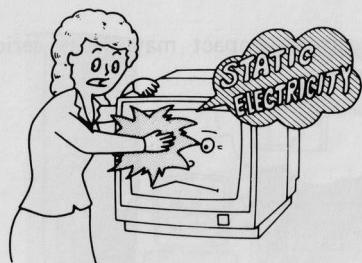
- Use a mild cleaning solution of soap and water or a product you would use to clean an enamel surface.
- Afixing cellophane tape or other adhesive materials to the cabinet may cause damage.
- Rubber or vinyl products that have prolonged contact with the surface may cause damage to the cabinet.

- Cleaning the cabinet.



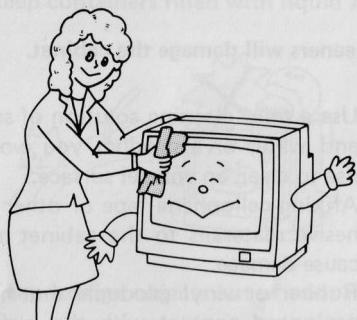
The monitor should be OFF. To clean the cabinet, use a dry, soft cloth. If the cabinet is very dirty, dampen a cloth with a mild cleaning solution (soap and water), and then wipe with a dry cloth.

● Static electricity.



You may feel mild electricity when your hand touches the screen (CRT). This is normal.

● Cleaning the CRT.

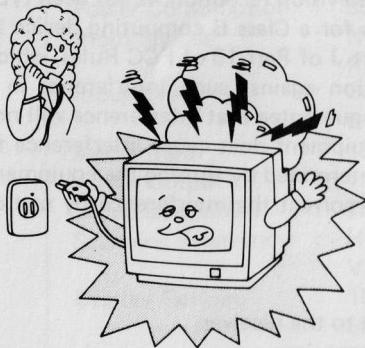


The surface of the CRT will collect dirt and dust, but it can be cleaned like your TV screen. The monitor should be OFF first. Spray a mild cleaner lightly on a soft, clean cloth and wipe the screen. Use of an abrasive cleaner or harsh chemical solvent may damage the CRT screen.

Always consult your dealer for external inspection of equipment.

VI-4. HAZARDOUS CONDITIONS

- Unusual odor, sound or smoke.



If an unusual odor or sound occurs, or smoke is detected, disconnect the plug from the power outlet immediately. Check the monitor for any obvious problems and consult your dealer if the problem recurs.

VII. FCC NOTICE

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient the receiving antenna
- relocate the computer with respect to the receiver
- move the computer away from the receiver
- plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available form the US Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

VIII. SPECIFICATIONS

CRT	:	13", 90°, 0.42 mm slit pitch (Polish, dark)
Power Input	:	AC 115V, 60 Hz
Power Consumption	:	85W Max.
Input Signals	:	NTSC Comp./ Sep. video/RGBI/XRGB/ RGB
Input Levels	:	Comp. 1Vp-p, 75 ohms, Termination RGB TTL levels
Audio Input	:	436 mVrms, 47k ohms, Termination
Audio Output	:	1.0W
Video Bandwidth	:	15 MHz (Approx.)
Scanning Frequency	:	Horizontal : 15.7 KHz Vertical : 59.9 Hz
Display Format	:	1000 Characters (40 col. x 25 lines, 5 x 7 dot array) 2000 Characters (80 col. x 25 lines, 5 x 7 dot array)
Display Size	:	Horizontal : 245 mm (IBM™ Timing) Vertical : 182 mm Horizontal : 215 mm (APPLE™ Timing) Vertical : 175 mm
Resolution	:	1000 Characters Horizontal : 320 dots Vertical : 240 lines 2000 Characters Horizontal : 640 dots Vertical : 240 lines
Misconvergence	:	Center : 0.5 mm Max. Around : 1.0 mm Max.
Dimensions	:	380 (W) x 340 (H) x 425 (D) mm
Weight	:	12 kg; 26.4 lbs.

C.ITOH

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Printed in Japan

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Part No. 23982547